

that may initiate an atom or group transfer radical polymerization ("ATRP") and at least one site that may initiate a non-ATRP polymerization process. The non-ATRP polymerization process may be any one of a cationic, anionic, free radical, controlled free radical, metathesis, ring opening and coordination polymerization process. Either of the polymerization processes may be conducted first as long as the other initiation site remains intact after the first polymerization process.

Embodiments of the present invention comprise macroinitiators which initiate polymerization processes to produce block copolymers. The block copolymers may comprise monomer units polymerizable by different polymerization processes, including but not limited to, cationic, anionic, free radical, controlled free radical, metathesis, ring opening and coordination polymerization processes."

In the Claims

Cancel claims 68, 69, 72, 73, and 75-80.

Add new claims, as follows:

117. (New) A multifunctional polymerization initiator compound, comprising:

at least one radically transferable atom or group capable of initiating an atom transfer radical polymerization; and

at least one initiation group capable of initiating at least one of a cationic, an anionic, a peroxide initiated free radical, a controlled free radical, metathesis, ring opening and coordination polymerization process.

118. (New) The multifunctional polymerization initiator compound of claim 117, wherein the at least one initiation group comprises a peroxide group.

119. (New) A macroinitiator for polymerization processes, comprising:

a free radical polymerization initiator group comprises at least one of an azo group and a peroxy group;

at least two polymer blocks each comprising monomeric units derived from alkyl methacrylate monomers attached to the convention free radical polymerization initiator group.

120. (New) A macroinitiator for polymerization processes, comprising:

a polymer block comprising radically polymerizable monomers; and

a free radical polymerization initiation group.

121. (New) The macroinitiator for polymerization processes of claim 120, wherein the polymer block comprises monomer units derived from dimethyl aminomethyl methacrylate monomers.

122. (New) A macroinitiator for polymerization processes, comprising:

a polymer block, comprising at least one monomer unit derived from monomers capable of being polymerized by a process selected from the group consisting of cationic, anionic, free radical, controlled free radical, metathesis, ring opening, and coordination polymerization processes; and

at least one radically transferable atom or group capable of initiating an atom or group transfer radical polymerization.

123. (New) The macroinitiator for polymerization processes of claim 122, wherein the monomer units are derived from at least one of a styrene, a vinyl chloride, and a vinyl acetate; and further comprising a second polymer block comprising monomer units derived from at least one monomer selected from the group consisting of substituted styrene(s), (meth)acrylates, (meth)acrylonitrile, (meth)acryamides, and other radically polymerizable monomers capable of being polymerized by an atom or group transfer radical polymerization.

124. (New) A macroinitiator for polymerization processes, comprising:

at least two radically transferable atoms or groups capable of initiating an atom or group transfer radical polymerization process; and